WHAT IS CLAIMED IS:

1. An apparatus for embedding imperceptible codes into digital image data comprising:

a data divider to divide, per frame, digital image data into an "N" number of fields ("N" being an integer of 2 or more);

a code producer to produce an N/m number of combinations of imperceptible codes, each combination having an "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables ("m" being an integer of 2 or more and given by dividing "N" by an integer); and

a code embeder to embed the N/m number of combinations of imperceptible codes into image data divided into the "N" number of fields so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to a specific rule of positional correspondence to give correlation among the "m" number of fields in the "N" number of fields of one frame.

2. An apparatus for extracting imperceptible codes from digital image data comprising:

a data divider to divide, per frame, input digital image data into an "N" number of fields ("N" being an integer of 2 or more) according to a specific rule of positional correspondence to give correlation among an "m" number of fields in the "N" number of fields of one frame ("m" being an integer of 2 or more and given by dividing "N" by an integer), the input digital image data carrying imperceptible codes that have been embedded into the input digital image data by dividing, per frame, original digital image data into the "N" number of fields, producing an N/m number of combinations of imperceptible codes, each combination having the "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables, and embedding the N/m number

of combinations of imperceptible codes into image data divided into the "N" number of fields according to a specific code embedding technique so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to the rule of positional correspondence;

a code extractor to extract the imperceptible codes embedded into the image data divided into the "N" number of fields according to a code extraction technique corresponding to the code embedding technique;

a code-pair combiner to combine the extracted imperceptible codes into the N/m number of combinations according to the rule of positional correspondence;

a code operator to execute the specific function to conduct a specific operation by using the imperceptible codes of each of the N/m number of combinations as variables; and

a determiner to determine that the input digital image data has not been tampered with only when results of the specific operation is equal to specific identification code for all of the N/m number of combinations.

3. A method of embedding imperceptible codes into digital image data comprising the steps of:

dividing, per frame, digital image data into an "N" number of fields ("N" being an integer of 2 or more);

producing an N/m number of combinations of imperceptible codes, each combination having an "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables ("m" being an integer of 2 or more and given by dividing "N" by an integer); and

embedding the N/m number of combinations of imperceptible codes into image data divided into the "N" number of fields so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to a specific rule of positional correspondence to give correlation among the "m" number of fields in the "N" number of fields of

one frame.

4. A method of extracting imperceptible codes from digital image data comprising the steps of:

dividing, per frame, input digital image data into an "N" number of fields ("N" being an integer of 2 or more) according to a specific rule of positional correspondence to give correlation among an "m" number of fields in the "N" number of fields of one frame ("m" being an integer of 2 or more and given by dividing "N" by an integer), the input digital image data carrying imperceptible codes that have been embedded into the input digital image data by dividing, per frame, original digital image data into the "N" number of fields, producing an N/m number of combinations of imperceptible codes, each combination having the "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables, and embedding the N/m number of combinations of imperceptible codes into image data divided into the "N" number of fields according to a specific code embedding technique so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to the rule of positional correspondence;

extracting the imperceptible codes embedded into the image data divided into the "N" number of fields according to a code extraction technique corresponding to the code embedding technique;

combining the extracted imperceptible codes into the N/m number of combinations according to the rule of positional correspondence;

executing the specific function to conduct a specific operation by using the imperceptible codes of each of the N/m number of combinations as variables; and

determining that the input digital image data has not been tampered with only when results of the specific operation is equal to specific identification code for all of the N/m number of

combinations.

5. A computer-implemented method of embedding imperceptible codes into digital image data comprising the steps of:

dividing, per frame, digital image data into an "N" number of fields ("N" being an integer of 2 or more);

producing an N/m number of combinations of imperceptible codes, each combination having an "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables ("m" being an integer of 2 or more and given by dividing "N" by an integer); and

embedding the N/m number of combinations of imperceptible codes into image data divided into the "N" number of fields so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to a specific rule of positional correspondence to give correlation among the "m" number of fields in the "N" number of fields of one frame.

6. A computer-implemented method of extracting imperceptible codes from digital image data comprising the steps of:

dividing, per frame, input digital image data into an "N" number of fields ("N" being an integer of 2 or more) according to a specific rule of positional correspondence to give correlation among an "m" number of fields in the "N" number of fields of one frame ("m" being an integer of 2 or more and given by dividing "N" by an integer), the input digital image data carrying imperceptible codes that have been embedded into the input digital image data by dividing, per frame, original digital image data into the "N" number of fields, producing an N/m number of combinations of imperceptible codes, each combination having the "m" number of imperceptible codes given by a function, an inverse of a specific function that gives a specific identification code by using the "m" number of imperceptible codes as variables, and embedding the N/m number of combinations of imperceptible codes

into image data divided into the "N" number of fields according to a specific code embedding technique so that the "m" number of imperceptible codes of each combination are embedded into image data in the "m" number of fields according to the rule of positional correspondence;

extracting the imperceptible codes embedded into the image data divided into the "N" number of fields according to a code extraction technique corresponding to the code embedding technique;

combining the extracted imperceptible codes into the N/m number of combinations according to the rule of positional correspondence;

executing the specific function to conduct a specific operation by using the imperceptible codes of each of the N/m number of combinations as variables; and

determining that the input digital image data has not been tampered with only when results of the specific operation is equal to specific identification code for all of the N/m number of combinations.